CLAIMS

1. A control system for a hydraulic construction machine comprising:

a prime mover (10);

at least one variable displacement hydraulic pump (1, 2) driven by said prime mover;

at least one hydraulic actuator (50-56) driven by a hydraulic fluid from said hydraulic pump;

input means (71) for commanding a reference target revolution speed (NRO) of said prime mover;

revolution speed control means (14) for controlling a revolution speed of said prime mover; and

operation command means (38-44) for commanding operation of said hydraulic actuator,

wherein said control system comprises:

target revolution speed setting means (70, 700a-700v) for setting a target revolution speed of said revolution speed control means based on the reference target revolution speed;

operation detecting means (73, 74, 77-81) for detecting a command input from said operation command means; and

load pressure detecting means (75, 76) for detecting a load pressure of said hydraulic pump, and

wherein said target revolution speed setting means comprises;

a first modifying section (700d1-700d6) for changing the target revolution speed depending on the command input

from said operation command means, which is detected by said operation detecting means; and

a second modifying section (700v, 700g) for modifying change of the target revolution speed, which is given by said first modifying section, depending on the load pressure detected by said load pressure detecting means.

2. The control system for the hydraulic construction machine according to Claim 1,

wherein said second modifying section (700v, 700g) modifies the change of the target revolution speed, which is given by said first modifying section (700d1-700d6), to be a minimum when the load pressure detected by said load pressure detecting means (75, 76) is lower than a certain value.

3. The control system for the hydraulic construction machine according to Claim 1, further comprising:

pump absorption torque control means (22) for making control to reduce a displacement of said hydraulic pump corresponding to a rise of the load pressure of said hydraulic pump (1, 2) such that maximum absorption torque of said hydraulic pump does not exceed a setting value,

wherein said second modifying section (700v, 700g) modifies the change of the target revolution speed, which is given by said first modifying section (700d1-700d6), to be a minimum in a control region Y of said pump absorption torque control means where the load pressure of said hydraulic pump is lower than that in a control region X thereof.

4. The control system for the hydraulic construction

machine according to Claim 1, further comprising:

pump absorption torque control means (22) for, when the load pressure of said hydraulic pump (1, 2) becomes higher than a first value (PC), making control to reduce a displacement of said hydraulic pump corresponding to a rise of the load pressure of said hydraulic pump such that maximum absorption torque of said hydraulic pump does not exceed a setting value,

wherein said second modifying section (700v, 700g) modifies the change of the target revolution speed, which is given by said first modifying section (700d1-700d6), to be a minimum when the load pressure detected by said load pressure detecting means (75, 76) is lower than a second value (PA), the second value PA being set to near the first value (PC).

5. The control system for the hydraulic construction machine according to Claim 1,

wherein said second modifying section (700v, 700g) computes a revolution speed modification value (DNLR) which is changed depending on the load pressure detected by said load pressure detecting means (75, 76), thereby modifying the change of the target revolution speed, which is given by the first modifying section (700d1-700d6), in accordance with the computed revolution speed modification value.

6. The control system for the hydraulic construction machine according to Claim 1,

wherein said first modifying section includes first means (700d1-700d6) for computing a first revolution speed

modification value (KNL) corresponding to the operation input from said operation command means (38-44), which is detected by said operation detecting means (73, 74, 77-81),

said second modifying section includes second means (700v) for computing a second revolution speed modification value (DNLR) corresponding to the magnitude of the load pressure detected by said load detecting means, and third means (700g) for executing computation based on the first revolution speed modification value and the second revolution speed modification value, to thereby obtain a third revolution speed modification value (DND), and

said first and second modifying sections further include fourth means (700h) for executing computation based on the third revolution speed modification value and the reference target revolution speed (NRO), to thereby obtain the target revolution speed.

7. The control system for the hydraulic construction machine according to Claim 6,

wherein said first means is means (700d1-700d6, 700e, 700f) for computing, as the first revolution speed modification value, a first modification revolution speed (KNL),

said second means is means (700g) for computing, as the second revolution speed modification value, a modification coefficient (DNLR),

said third means is means (700g) for multiplying the first modification revolution speed by the modification coefficient to obtain, as the third revolution speed

modification value, a second modification revolution speed (DND), and

said fourth means is means (700h) for subtracting the second modification revolution speed (DND) from the reference target revolution speed (NRO).

8. The control system for the hydraulic construction machine according to Claim 7,

wherein said second means (700v) computes the modification coefficient (DNLR) such that the modification coefficient is 0 when a magnitude of the load pressure is smaller than a preset first value (PA), the modification coefficient is increased from 0 when the magnitude of the load pressure exceeds the first value, and the modification coefficient becomes 1 when the magnitude of the load pressure reaches a preset second value.

9. The control system for the hydraulic construction machine according to Claim 1, further comprising:

pump absorption torque control means (22) for making control to reduce a displacement of said hydraulic pump corresponding to a rise of the load pressure of said hydraulic pump (1, 2) such that maximum absorption torque of said hydraulic pump does not exceed a setting value; and

maximum absorption torque modifying means (70, 70i, 70j, 32, 22, 22c) for modifying the setting value to increase the maximum absorption torque of said hydraulic pump when the target revolution speed is modified to be lower than a preset rated revolution speed (Nmax) by said first modifying section (700d1-700d6, 700e, 700f, 700g, 700h).

10. A control system for a hydraulic construction machine comprising:

a prime mover (10);

at least one variable displacement hydraulic pump (1, 2) driven by said prime mover;

at least one hydraulic actuator (50-56) driven by a hydraulic fluid from said hydraulic pump;

input means (71) for commanding a reference target revolution speed (NRO) of said prime mover; and

revolution speed control means (14) for controlling a revolution speed of said prime mover,

wherein said control system comprises:

target revolution speed setting means (70, 700a-700v) for setting, separately from the target revolution speed set based on the reference target revolution speed, a target revolution speed of said revolution speed control means to a revolution speed lower than a maximum rated revolution speed;

pump absorption torque control means (22) for making control to reduce a displacement of said hydraulic pump corresponding to a rise of the load pressure of said hydraulic pump such that maximum absorption torque of said hydraulic pump does not exceed a setting value; and

maximum absorption torque modifying means (70, 70i, 70j, 32, 22, 22c) for modifying the setting value of the maximum absorption torque such that when the target revolution speed of said revolution speed control means is set by said target revolution speed setting means to the revolution speed lower

than the maximum rated revolution speed, the maximum absorption torque of said hydraulic pump is increased from the maximum absorption torque resulting when the target revolution speed of said revolution speed control means is at the maximum rated revolution speed, thus minimizing an amount of decrease of a maximum delivery rate of said hydraulic pump with the increase of the maximum absorption torque.

11. A control system for a hydraulic construction machine comprising:

a prime mover (10);

at least one variable displacement hydraulic pump (1, 2) driven by said prime mover;

at least one hydraulic actuator (50-56) driven by a hydraulic fluid from said hydraulic pump;

input means (71) for commanding a reference target revolution speed (NRO) of said prime mover;

revolution speed control means (14) for controlling a revolution speed of said prime mover; and

operation command means (38-44) for commanding operation of said hydraulic actuator,

wherein said control system comprises:

operation detecting means (73, 74, 77-81) for detecting a command input from said operation command means;

target revolution speed setting means (70, 700a-700v) for modifying the reference target revolution speed corresponding to the command input from said operation command means, which is detected by said operation detecting

means, and setting a target revolution speed of said revolution speed control means;

pump absorption torque control means (22) for making control to reduce a displacement of said hydraulic pump corresponding to a rise of the load pressure of said hydraulic pump such that maximum absorption torque of said hydraulic pump does not exceed a setting value; and

maximum absorption torque modifying means (70, 70i, 70j, 32, 22, 22c) for modifying the setting value of the maximum absorption torque such that when the target revolution speed of said revolution speed control means is set by said target revolution speed setting means to a revolution speed lower than a maximum rated revolution speed, the maximum absorption torque of said hydraulic pump is increased from the maximum absorption torque resulting when the target revolution speed of said revolution speed control means is at the maximum rated revolution speed, thus minimizing an amount of decrease of a maximum delivery rate of said hydraulic pump with the increase of the maximum absorption torque.